Mercy Wangui Muiruri

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EDUCATION

Northwestern University Evanston, IL
Bachelor of Science in Computer Science, Minor in Machine Learning and Data Science
Cumulative GPA 3.67 June 2027
Relevant Coursework: Artificial Intelligence, Data Engineering, Data Structures and Algorithms, **Linear Algebra**, Statistics, Scalable Software Architectures, Programming in C, C++ and Python, **Computer Memory**, Software Design

TECHNICAL SKILLS

Languages/Frameworks/Tools: Python, R, SQL, **C++**, **C**, JavaScript, React, SQL, Docker
Machine Learning: TensorFlow, TensorFlow-GPU, **PyTorch**, Keras, Pandas, Numpy, Matplotlib, Os, scikit-learn, CUDA

PROJECTS

Toxic Comment Model December 2024 - Current
- Developed a multi-headed deep learning model for detecting comment toxicity; achieving a 97% accuracy by building a Sequential model using Tensorflow Keras API, Embedding, Dense layers and a Sigmoid activation
- Evaluated model by creating an interactive web UI for real-time classification using Gradio which allowed users to input comments and visualize predictions for toxicity levels using Matplotlib

Audio Classification Model December 2024 - Current
- Designed a **convolutional deep neural network** for audio classification, achieving 95% accuracy in detecting specified audio, by stacking multiple convolutional and dense layers to capture patterns
- Preprocessed and segmented large audio files, cutting data overloading by 30% using Tensorflow IO to convert waveforms to Numpy arrays for partitioning and batch processing to form a data pipeline

Image Classification Model November 2024 - December 2024
- Built an object identification model; as measured by a 98% accuracy on custom dataset of 10,000 images; by implementing a MaxPooling2D layer to condense data and a Sigmoid activation for binary classification
- Improved model performance; reducing training time by 30% by leveraging **CUDA** acceleration using Tensorflow-GPUs and the Adam optimizer which speeds up convergence in the network

WORK EXPERIENCE

Northwestern University Formula Racing | *Software Engineer* September 2023 - Current
- Designed and implemented object-oriented C++ algorithms for **real-time vehicle suspension system** simulations and developed automated testing protocols enhancing code reliability and scalability.
- Boosted data transmission efficiency by 25% using **CAN Bus protocols**, ensuring seamless communication across components for reliable suspension monitoring and vehicle diagnostics

Caregivers Network Africa | *Web developer* June 2024 - August 2024
- Engineered a responsive web application which increased engagement by 20% by utilizing React, JavaScript and Tailwind to deliver a scalable front-end to users
- Increased codebase modularity leading to a 30% decrease in website load time and 99% uptime frequencies through code-cleanup, refactoring components and leveraging Netlify's continuous deployment features

LEADERSHIP & PROFESSIONAL DEVELOPMENT

CS Teaching Assistant | *Data Structures and Algorithms* January 2025 - Current
- Provide in-depth guidance on key data structures like arrays, linked lists, stacks, queues, trees, graphs and algorithmic concepts
- Conduct code reviews for 170 students to ensure correctness, readability, and optimal performance, offering detailed feedback for improvements

AFFILIATIONS

Affiliations: ColorStack, CodePath, Rewriting the Code, Code2040, Society of Women Engineers, Women in Computing, Northwestern University Formula Racing Organization, National Society of Black Engineers, Chicago Tech Collective